Assessment of factors influencing the occurrence and pathological picture of sarcoptic mange in red foxes (Vulpes vulpes)

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Duerr, Salome[1]; Nimmervoll, Helena[1]; Hoby, Stefan[1]; Robert, Nadia[1]; Soglia, Dominga[2]; Rossi, Luca[2]; Sager, Heinz[3]; Huessy, Daniela[4]; Meli, Marina L.[5]; Berny, Philippe[6]; Ryser-Degiorgis, Marie-Pierre[1]

[1]Centre for Fish and Wildlife Health, Univ. of Bern; [2]University of Turin; [3]Institute of Parasitology, Univ. of Bern; [4]Institute for Vet. Bacteriology, Univ. of Bern; [5]Clinical Laboratory, University of Zurich; Toxicology Laboratory, [6]ENV Lyon

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Sarcoptic mange can have devastating effects in wild populations. However, the clinical and pathological pictures of mange show notable variations, both between animal species and between individuals. The aim of the present study was to assess the importance of potential influencing factors, namely host age and gender, concomitant diseases and infections, chronic intoxication, season, geographical origin (including epidemiological pattern, hunting management and climate), and mite genetic on the occurrence and severity of mange in the red fox (Vulpes vulpes). 153 mangy, 124 healthy and 14 non-mangy but diseased foxes were collected in 2004-2006 from several geographic areas of Switzerland with different epidemiological patterns of mange. All foxes were necropsied and selected cases were submitted to histological, parasitological, bacteriological and toxicological (chloralosis) examination. Mange cases were classified into type A (early lesions), B (chronic, fatal lesions) and C (healing stage). Specimens of Sarcoptes scabiei were genetically analysed. Information on hunting management was collected by telephone interviews, and data on climate (temperature, precipitations) were provided by Atlas of Switzerland (www.atlasderschweiz.ch).

Mange occurred significantly more frequently in mildhumid than both cold-humid and cold-dry climate zones. Significant differences between types of mange lesions were detected depending on the geographical origin of the foxes and the presence of a severe infestation with endoparasites. Type B was more often observed in relatively recently infected areas compared to those where mange has existed for a longer period of time. All other considered factors did not reveal significant differences. Our results suggest that climate influences are relevant for the occurrence of mange but not for its severity. Association between mange and endoparasitosis may indicate decreased fitness of the affected animal. Most importantly, animals from an area where mange has been endemic for a long time seem more likely to survive the disease, which possibly indicates a selection process.